

Human and Ecological Risk: Associations Among Human Health, Ecological and Environmental Monitoring Data

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While all life is affected by the quality of the environment, environmental risk factors for human and wildlife health are typically assessed using independent processes that are dissimilar in scale and scope. However, the integrated analysis of human, ecological, and environmental information may reveal important underlying relationships between the environment and its effect on the condition of living organisms. The primary goal of this project is to demonstrate an approach to identify associations among human health, ecological, and environmental monitoring data for a specific geographic area and time period. This integrated analysis may support the development of hypotheses relating environmental condition to human health and wildlife risks. In addition to the results revealed by these analyses, another goal for this project is to identify obstacles and propose solutions for improved integration of human and ecological risk assessment. Specific objectives of this research are to (1) identify suitable indicators and sources of human, wildlife, and environmental data; (2) collect, manipulate, and aggregate data into compatible formats; and (3) display information using Geographical Information Systems (GIS), and analyze associations among information layers using various statistical approaches. Specific research will focus on the state of New Hampshire and the period from 1990-2000, evaluating spatial and temporal correlations between indicators of human health (e.g., infant mortality), ecological health (e.g., communities of birds), and environmental factors (e.g., water pollutants). The diversity of information required for this project necessitates partners with diverse training and affiliations, i.e., those trained in public health, ecology, environmental sciences, spatial analysis and statistics, and working with government environmental protection and human services, private industry and academia. This comprehensive approach will contribute to the development of methods useful for the evaluation of the interconnectivities between ecosystem health and public health.